

Laysan Island Invasive Plant Monitoring and Control with Volunteers Project Proposal

Name of Project: Laysan Island Restoration Volunteers

Refuge/Wetland Management District: Hawaiian Islands National Wildlife Refuge within the Papahānaumokuākea Marine National Monument (the Monument)

Project Description: The goal of the Laysan Island Invasive Plant Monitoring and Control Project is to continue habitat and ecosystem restoration efforts on Laysan Island. Laysan is an isolated island, located 930 miles northwest of Honolulu and accessible only via a 4-day ship voyage. The island's human population of 1 staff technician and 3 volunteers spend 6 months at a time in a year-round U.S. Fish and Wildlife Service (FWS) field camp with little contact with the outside world. The primitive living conditions consist of platform tents where personnel live, work, eat, and sleep. Laysan Island provides critical habitat for endangered species and species endemic to the Monument, such as the Laysan duck and Laysan Finch. In 2011, 24 endangered Nihoa millerbirds were successfully translocated to Laysan Island from Nihoa Island, thereby adding another endangered species to the island. The island also provides critical nesting habitat for millions of seabirds including Laysan and black-footed albatross, great frigatebirds, boobies, tropicbirds, petrels, shearwaters, noddies, and terns.

Less than 100 years ago, the island was almost entirely de-vegetated due to the misguided introduction of rabbits by private parties; many endemic plant and avian species became extinct. Fortunately, with the extermination of the rabbits 30 years later, the vegetation came back. Unfortunately, it was non-native plant species that became established instead of native species. The FWS began active habitat restoration efforts in 1992, initially focusing on the removal of the Common Sandbur (*Cenchrus echinatus*) over 650 acres. We can proudly say that with the invaluable help of scores of volunteers working thousands of hours over the past 20 years, the Common Sandbur eradication is nearly complete; zero Common Sandbur plants have been found in the last 24 months. The island, however, has many other invasive plant species that need to be and are currently under active eradication efforts.

If approved, this proposal will provide critical funding to support volunteer activities on Laysan to help restore the island's ecosystem. Volunteers are necessary and instrumental toward continuing efforts to eradicate invasive plant species such as Indian Dropseed (*Sporobolus pyramidatus*), Bermuda Grass (*Cynodon dactylon*), and Indian Fleabane (*Pluchea indica*) by removing the plants, conducting post-monitoring, and treating the sites to prevent re-establishment. Volunteers also propagate and out-plant native plant species in areas free of invasive species. In addition to the habitat restoration, volunteers are essential to regular monitoring of avian, mammalian, and invertebrate species to detect new introductions of invasive plants and animals. The Laysan Island Ecosystem Restoration Project requires physically demanding activities in a difficult environment on a very remote island with primitive living conditions. This project could not be successful without the help of volunteers. Since the inception of the restoration project, FWS has trained 100 volunteers, offering valuable job and life experience, and training future restoration biologists.

The control model for invasive species eradication and monitoring is consistent with the Early Detection and Rapid Response strategy including: island quarantine procedures, continual monitoring, inter-agency consulting, assessment and prioritization, invasive species removal, post-removal monitoring, and reporting including inter-agency communication to promote awareness. In 2010, volunteers treated approximately 383 acres of Indian Dropseed and Bermuda Grass and 31 acres of Indian Fleabane, annually. However, in 2011, Laysan Island experienced a major storm that produced 10 inches of rain over 6 hours. Rainwater pooled on the east side of the island and eventually broke through the dunes, flooding the hypersaline lake on the interior of the island. As a result, the lake distributed seeds from the seed bank over a large area where non-native plants hadn't been established previously. This drastically increased the area where volunteers conducted invasive species removal. Indian Dropseed and Bermuda Grass area increased to 816 acres and Indian Fleabane increased to 21,183 acres treated. We expect these numbers to almost double for 2012, as the flood affected only the last 6 months of the proposal timeline for 2011.

Volunteers continue long-term monitoring, mapping, and control projects of the Common Sandbur and Swinecress (*Coronopus didymus*), for early detection and response of any new plants, as well as monitor and remove lower priority species such as Tobacco (*Nicotiana glauca*) and Hairy Horseweed

(*Conyza bonariensis*) as possible. Teams also survey for ants to assess the current species on island and monitor for new introductions.

Friends Groups, Volunteers and Other Partners: Laysan work would not be possible without the efforts of dedicated partners from FWS Ecological Services, USDA, and National Marine Fisheries. Laysan volunteers work with staff to monitor and treat at least 21,000 acres for infestations, and the entire island (1,106 acres) is continually monitored. Volunteers are engaged in native plant propagation and outplanting activities, including propagation of endangered species such as the Hawaiian endemic Fan Palm (*Pritchardia remota*) and the endemic Laysan sedge (*Cyperus pennatiformis* var. *bryanii*), as well as a species of concern *Solanum nelsonii*.

Public Outreach and/or Environmental Education: Papahānaumokuākea Marine National Monument Reports are issued on a monthly basis at <http://www.fws.gov/hawaiianislands/monthlyupdates.html> and http://papahanaumokuakea.gov/management/managers_reports.html and include news and reports from Laysan Island. Additionally, Laysan Island volunteers assist with writing trip reports for each field season reporting on the data collected, the status of the island, and surveys conducted.

Post-treatment Monitoring: When a new infestation from any invasive plant species under active treatment is found the location is marked with a GPS point. The infestation is evaluated based on size and time requirements. If it is determined to be manageable, a treatment plot will be established. Each invasive species is monitored on a set schedule; beginning with weekly monitoring and moving on to progressively longer monitoring intervals as the duration since the last detection increases.

Criteria for Project Success: In 2012, Laysan Island will provide training for 6 volunteers who will spend time in the remote location learning invasive species removal, avian species monitoring, entomological and vegetation survey techniques and plant propagation. This year's volunteers will conduct approximately 2500 hours of invasive species removal, 500 hours of vertebrate species monitoring, 25 hours of invasive invertebrate monitoring, 500 hours of data management, and 500 hours of reporting.

Budget

GRANT REQUEST

1/10 of Transportation between Honolulu and Laysan*:	\$2,100
Volunteer Supplies (Clothing, Personal Protective Equipment, Monitoring and Removal, Camp):	\$3,400
Volunteer Management:	\$5,000
Food provided on Laysan:	\$7,500
Emergency and satellite Communications:	\$400
Medical Supplies and Training:	\$600
<u>Emergency Preparations and Supplies:</u>	<u>\$1,000</u>
Total:	\$20,000

ANNUAL VOLUNTEER CONTRIBUTION (calculated at \$21.00 per hour per volunteer)

2500 hours invasive species removal:	\$52,500
500 hours vertebrate species monitoring:	10,500
25 hours invertebrate monitoring for invasives:	525
500 hours data management:	10,500
<u>500 hours reporting:</u>	<u>10,500</u>
Total per person:	\$84,525
x (6) Volunteers, Total Matching Contribution:	\$507,150

*** This amount is included only keep request to \$20,000. Additional transportation grant funds are possible up to the \$20,000 true transportation cost.**